AN2049
Application note

Demonstration board user guidelines for the TS4984 low voltage audio power stereo amplifier

Introduction

This application note applies to the STEVAL-CC003V1 demonstration board, designed to evaluate the low-voltage audio power stereo amplifier TS4984.

The document provides:

- a description of the demonstration board,
- the layout of the top and bottom layers.

Key features of the TS4984

- Low voltage audio power stereo amplifier with active low standby mode
- Operating range from V_{CC} = 2.2 to 5.5 V
- 1 W output power at V_{CC} = 5 V, THD =1%, F = 1 kHz, with 8 Ω load
- Ultra-low power consumption in standby mode (10 nA)
- 62 dB PSRR at 217 Hz with grounded inputs (Av = 2 V/V)
- Near-zero pop and click
- Ultra-low distortion (0.1%)
- Module gain set at 2 V/V
- Thermal and short-circuit protection

1 Description of the demonstration board

The STEVAL-CC003V1 is a demonstration board designed for the TS4984 low-power audio stereo amplifier.

The micropackage QFN16 (quad, flat, non-leaded,16 pins) combines space-saving with good thermal dissipation.

The BTL gain is set at 2 V/V for both channels and can be adapted if necessary by modifying the R1 (R8) or R2 (R6) values for the left (right) channels.

The R3 (R6) and C3 (C5) component locations on the board are empty so as to allow you to change both input configurations from single-ended to differential. To set-up the board for use in differential mode, you must modify R4 (R7).

The C1 (C6) component location is also empty so that you can add a low-pass filter if necessary.

2 Demonstration board connectors

Caution: When you apply the power supply through Cn1, **do not** invert the polarity since this can destroy the U1 amplifier.

Connector	Description
Cn1	Power connector (V_{CC} and GND). Power supply voltage from 2.2 to 5.5 V.
Cn2 and Cn3	Input signal connector for left channel (GND and active input signal).
Cn5 and Cn6	Input signal connector for right channel (GND and active input signal).
Cn4	Output signal connector for left channel (VO-L and VO+L).
Cn7	Output signal connector for right channel (VO-R and VO+R).
Cn8	Standby control connector (V_{CC}, Standby, GND). A short-circuit between V_{CC} and standby puts U1 in operation mode. A short-circuit between GND and Standby puts U1 in standby mode.

Figure 1. Schematic diagram

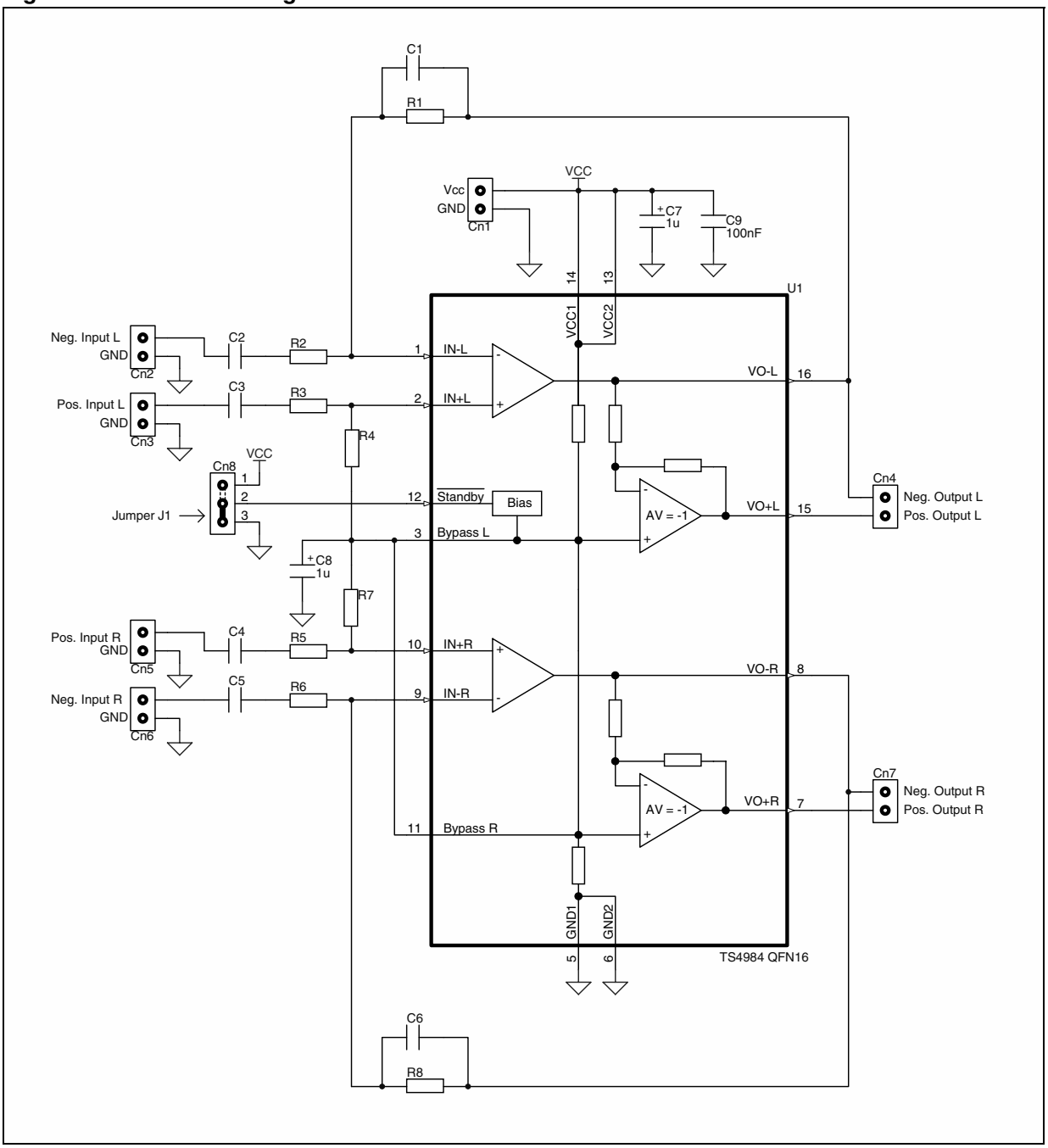


Table 1. Component list for the STEVAL-CCA003V1

Designation	Quantity	Description
C1	0	Unconnected, ceramic capacitors, 0603
C2	1	100 nF/16 V, ceramic capacitors, 0603
C3	0	Unconnected, ceramic capacitors, 0603
C4	1	Unconnected, ceramic capacitors, 0603
C5	0	100 nF/16 V, ceramic capacitors, 0603
C6	0	Unconnected, ceramic capacitors, 0603
C7	1	1 µF/50 V, electrolytic capacitor
C8	1	1 µF/50 V, electrolytic capacitor
C9	1	100 nF/16 V, ceramic capacitors, 0603
Cn1	1	2 pins header 2.54 mm pitch
Cn2	1	2 pins header 2.54 mm pitch
Cn3	1	2 pins header 2.54 mm pitch
Cn4	1	2 pins header 2.54 mm pitch
Cn5	1	2 pins header 2.54 mm pitch
Cn6	1	2 pins header 2.54 mm pitch
Cn7	1	2 pins header 2.54 mm pitch
Cn8	1	3 pins header 2.54 mm pitch
J1	1	Jumper, 2.54 mm pitch
R1	1	22 k, 1/16 W 1% resistor, 0603
R2	1	22 k, 1/16 W 1% resistor, 0603
R3	0	Unconnected, 1/16 W 1% resistor, 0603
R4	1	0R, 1/16 W 1% resistor, 0603
R5	0	Unconnected, 1/16 W 1% resistor, 0603
R6	1	22 k, 1/16 W 1% resistor, 0603
R7	1	0R, 1/16 W 1% resistor, 0603
R8	1	22 k, 1/16 W 1% resistor, 0603
U1	1	TS4984IQT (QFN16 package)

3 Demonstration board layout

The following schematics show the different layers and top view of the demonstration board.

Figure 2. PCB top layer

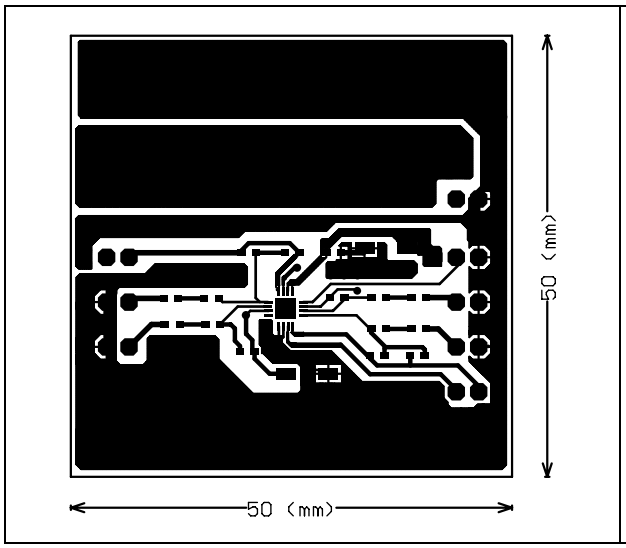


Figure 3. PCB bottom layer

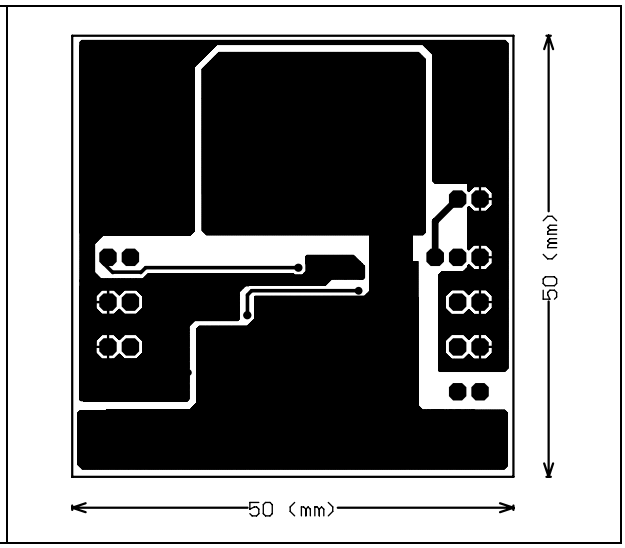
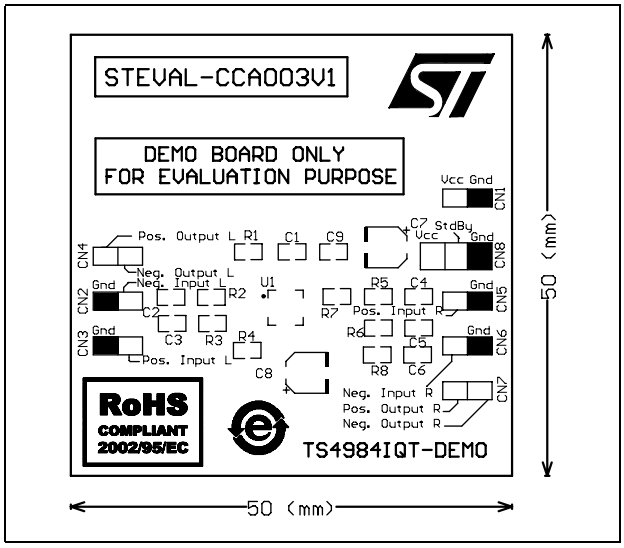


Figure 4. Top view of demonstration board



4 Conclusion

To order the board online, go to *http://www.st.com/stonline/domains/buy/buy_dev.htm*, and use the order code STEVAL-CC003V1.

5 Revision history

Table 2. Document revision history

Date	Revision	Changes
11-Apr-2004	1	Initial release.
13-Sep-2005	2	PCB figures added.
30-Nov-2006	3	New template.
31-Aug-2009	4	Updated *Introduction on page 1*. Updated figures in *Chapter 3: Demonstration board layout*. Added *Chapter 4: Conclusion*. Added *Chapter 5: Revision history*.

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